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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,479	05/08/2001	C. Glen Wensley	2000.34	3796

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EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,479

Applicant(s)

WENSLEY, C. GLEN

Examiner

Wills M Monique

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plastic Li-ion (PLiON™) Rechargeable Cells with Bonded Microporous Separator by Antoni S. Gozdz, in view of Gozdz U.S. Patent 6,579,643 and further in view of Gozdz et al. U.S. Patent 5,418,091.

The Gozdz publication teaches a separator for a lithium polymer battery comprising a standard single-layer polyethylene (PE) or three-layered polypropylene/polyethylene/polypropylene (PP/PE/PP) microporous separator structures (Pg.5, ¶ 3 & Pg. 6, ¶ 1). The membranes are efficient thermal shutdown films having first and second surfaces and a plurality of micropores (Pg. 9, ¶4). The membranes are surface treated with a coating of dibutyl phthalate-plasticized poly(vinylidene fluoride-co-hexafluoropropylene) (PVDF-HFP) copolymer. The coating does not affect the separator porosity. See page 6, ¶ 1.

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Gozdz does not expressly disclose micropores extending from the first to the second surface. The reference is silent to the weight ratios of gel-forming polymer to plasticizer, PVF: HFP weight percents and surface density of the coating material.

Gozdz U.S. Patent '643 teaches that microporous polyolefin separators including three-layer PP/PE/PP structures have pores extending from the first surface to the second surface (Fig. 1 and col. 7, lines 25-45). The pore structure enables the membranes to have higher electrolyte mobility and ionic conductivity between the electrodes (col.2, lines 40-53).

Gozdz U.S. Patent '091 teaches a flexible polymeric film comprising a copolymer of vinylidene fluoride with 8 to 25% hexafluoropropylene, a range in which the comonomer limits the crystallinity of the final copolymer to a degree which ensures good film strength while enabling the retention of about 40 to 60% of a solvent for the electrolyte salt (col. 2, lines 50-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the porous structure of Gozdz U.S. Patent '643 in the separator of the Gozdz publication in order to increase electrolyte mobility to enable improved ionic conductivity between the electrodes.

Regarding the weight percents of the coating material, it would have been obvious to one of ordinary skill to employ the PVF: HFP copolymer with 8 to 25% hexafluoropropylene to ensure good film strength while enabling the retention of about 40 to 60% of a solvent for the electrolyte salt, as taught by Gozdz U.S. Patent '091.

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As to the weight ratios of gel-forming polymer to plasticizer, it would have been obvious to employ the plasticizer in the amount of 30 to 50%, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. The skilled artisan recognizes that the amount of plasticizer directly effects the porosity of the separator material. The porosity must be controlled to achieve the desired ion conductivity between the electrodes, as illustrated by Gozdz U.S. Patent '643.

Regarding the surface density of the coating material, it would be reasonable to expect the surface densities of the Gozdz publication to be commensurate with the subject invention, as the coating films are made from the same materials.

Conclusions

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pandalwar et al. U.S. Patent 5,716,421 teaches a multi-layered gel electrolyte bonded rechargeable electrochemical cell and method of making same. Nakamizo et al. U.S. Pub. No. U.S. 2001/0004502 teaches a nonaqueous secondary battery.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is

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(703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

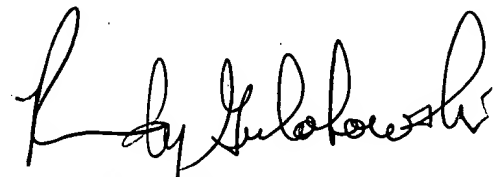
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

03/19/03



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